

Project Proposal

1 Group Information

Group Name: VayK

Member List:

Jackson McDonald, Matthew Pearson, Inacio de Souza, and Samantha Taylormoore

2 Introduction

Our project, VayK, is a vacation itinerary planner that integrates information on flights, hotels, and live events into a single platform. We chose this project because we wanted to build a product powered by an AI model that works with constantly changing, real-time data. Trip planning was a natural fit, as flight availability, hotel prices, and entertainment options are all dynamic and time-sensitive. The idea was also inspired by our own experiences traveling abroad, where we often struggled to efficiently discover activities and organize our plans. Our target users include anyone planning a trip, particularly young adults and students, who want a simple, centralized way to build an itinerary. To develop the website, we will use an Agile Scrum framework, with Jackson serving as product owner and Inacio as scrum master.

2 Novelty

Our main competitors are Travelocity, Skyscanner, Expedia, but our approach is fundamentally different. Those platforms focus primarily on bundling flights and hotels. This leaves users to plan activities, the experiences that truly make a trip memorable, on their own. While tools like Skyscanner efficiently compare flight prices across providers, they remain search-and-redirect platforms that do not generate structured itineraries or integrate experiences into a cohesive travel plan. VayK flips that model by putting activity planning first. Instead of starting with accommodations, our platform helps travelers discover experiences and build an itinerary around their interests. From there, VayK suggests conveniently located hotels and, if needed, assists with flight arrangements. The built-in scheduler also recommends nearby restaurants along the way, so users never have to scramble to find food between activities. By prioritizing experiences over logistics, VayK makes trip planning more intuitive, personalized, and stress free.

3 Customer Needs

The primary customers outside the team are individual leisure travelers, particularly young adults and students who want to plan trips centered around experiences rather than logistics. These users are looking for a simple way to organize activities, dining, and accommodations without needing to juggle multiple websites and tools.



Secondary stakeholders include local activity providers, restaurants, and hotels, as well as travel partners such as airlines or booking platforms. These stakeholders want greater visibility to travelers who are actively planning trips and are more likely to book experiences and services that fit their interests. By connecting users with relevant options, the platform helps these businesses reach engaged customers more effectively.

Both groups ultimately want a smoother, more enjoyable travel planning process. Primary customers want to feel excited and confident about their trip instead of overwhelmed by details and coordination. Secondary stakeholders want increased engagement and bookings from travelers who are better informed and more organized.

The desired overall experience is one where planning a trip feels intuitive and stress-free. Travelers should feel that the system understands their interests, helps them discover meaningful experiences, and organizes everything seamlessly, thus allowing them to focus on enjoying their trip rather than managing the logistics.

3.1 User Requirements

1. **As a** first-time traveler to a new destination, **I want** the system to automatically generate a complete itinerary after I enter my destination and trip duration, **so that** I receive a structured plan with daily activities within 10 seconds of submission.
2. **As a** study abroad student planning a 3-5 day trip with friends, **I want** the system to display at least 5 upcoming events (concerts, nightlife, festivals, etc) occurring during our travel dates within 10 seconds of search **so that** we can plan our itinerary around activities happening in real time at our destination.
3. **As a** traveler already at my destination, **I want** the system to display at least 5 activities or events occurring within the next 3 days in under 10 seconds, so that I can plan the next 1-3 days of my trip without using multiple platforms.
4. **As a** mother planning a 5-7 day trip for my family, **I want to** generate a family-friendly itinerary within 10 seconds that stays within 10% of my specified budget, so that we can maximize fun without exceeding our spending limit.
5. **As a** retired couple planning a 14-day trip to a single European destination, **we want** the system to generate a complete itinerary within 15 seconds that includes at least 2 interest-based activities per day (museums, scenic tours, historical landmarks, etc), **so that** we can enjoy a well-paced trip without manual research.

3.2 Acceptance Tests

1. **Given** that a first-time traveler enters a destination and trip duration with no prior itinerary, **when** they select the auto-generate option, **then** the system generates a structured itinerary within 10 seconds that includes daily activity recommendations for each day of the trip with at least two activities per day.
2. **Given** that a study abroad student enters a 3–5 day trip and selects interest categories such as concerts, nightlife, or festivals, **when** they search for events at their destination, **then** the system displays at least five upcoming events occurring during the selected travel dates within 10 seconds and allows the user to add selected events to their itinerary without navigating to external platforms.
3. **Given** that a traveler enables location access at their current destination, **when** they search for activities near their current location, **then** the system displays at least five activities or events occurring within the next three days in under 10 seconds and allows the user to add selected activities to their itinerary in real time.
4. **Given** that a mother planning a 5-7 day trip enters a destination, travel dates, and a total budget, **when** she prompts the system to generate an itinerary, **then** the system produces a family-friendly itinerary within 10 seconds that stays within 10 percent of the specified budget.
5. **Given** that a retired couple enters a single European destination, a 14-day duration, and interest categories such as museums, scenic tours, and historical landmarks, **when** they request itinerary generation, **then** the system generates a complete itinerary within 15 seconds that includes at least two interest-based activities per day.

4 Project Goals

4.1 Customer Problems and Benefits

Travel planning is often frustrating because most platforms prioritize flights and hotels while leaving activities and experiences for users to figure out on their own. This forces travelers to juggle multiple tools and manually build itineraries, making the process stressful and time-consuming.

Our system addresses this problem by putting experiences first. It helps users discover and organize activities, then structures accommodations, transportation, and dining around those

choices. The key user benefit is a simpler, more intuitive way to plan trips that reflects personal interests rather than rigid logistics.

This approach supports the customer's desired experience by making trip planning enjoyable instead of overwhelming. Travelers can focus on what excites them while the system handles the coordination, creating a more personalized and stress-free journey from start to finish.

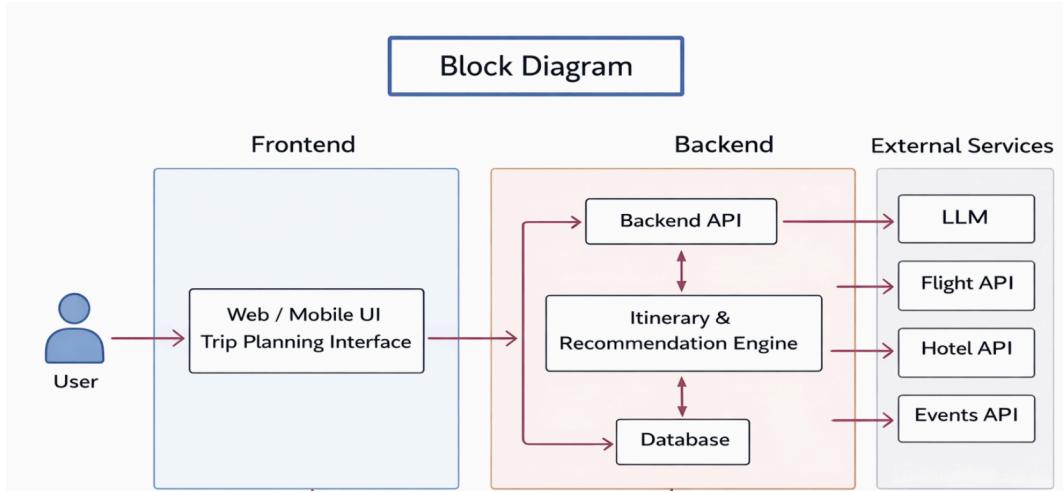
4.2 Measure of Success

We initially tested the idea with people outside our team, including roommates and athletic teammates to gather early feedback on the concept. Their reactions helped confirm that the problem we are addressing, experience focused trip planning, is relatable and valuable to potential users.

To determine whether customers receive their desired benefits, we plan to observe how real users interact with the platform. During testing with fellow students, we will measure factors such as the time required to generate an itinerary, any points of confusion or difficulty, overall satisfaction with the suggested plan, and whether they would choose to use the site again. These observations will help us understand whether the system is truly making trip planning easier and more enjoyable.

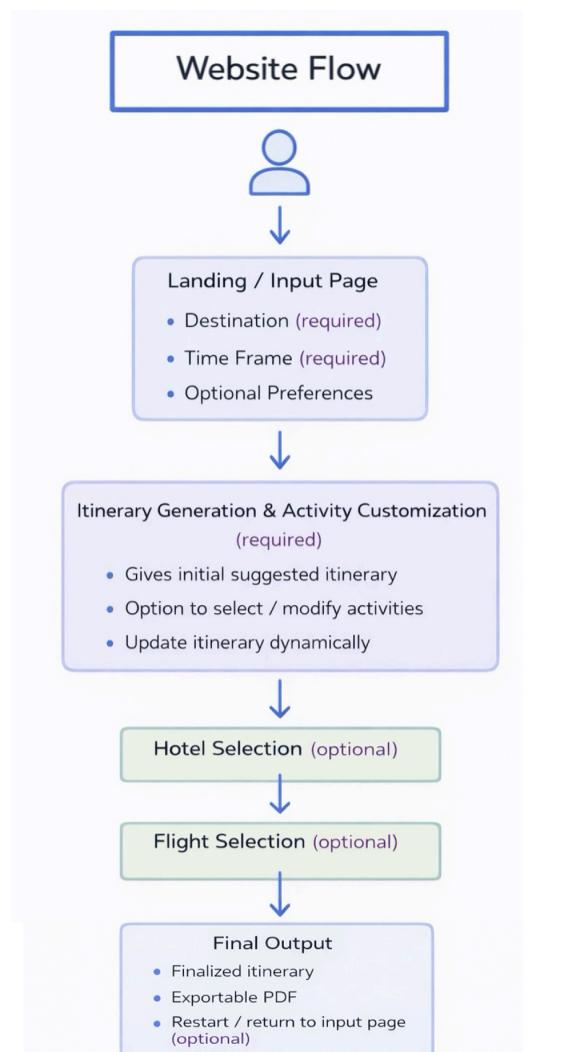
Once the website is publicly available, we will collect ongoing feedback through optional reviews and a 1-to-5 star rating system, along with open-ended comments. This direct user input will guide improvements and help ensure that the platform continues to deliver meaningful benefits to travelers.

5 System Description



The user begins their interaction with VayK on the opening page, where they enter their desired destination and may optionally provide additional trip details, such as specific events or activities they plan to attend. This information is sent to the backend API, which coordinates data retrieval and itinerary generation.

Using real-time data from external flight, hotel, and event services, the backend structures relevant information and passes it to the AI model. The user is then taken to the Activities page, where the system presents an AI-generated suggested itinerary focused on experiences at the destination. Users can customize this itinerary by selecting or deselecting activities, with updates processed dynamically by the backend. Once the activities are finalized, the user proceeds to the Hotel Options page, where accommodations are recommended based on availability and proximity to selected activities. The user then moves to the Flight Options page, which provides relevant transportation choices in a similar format. Throughout this process, the backend maintains the state of the user's itinerary across pages. After completing their selections, the system compiles the chosen activities, hotel, and flight into a finalized itinerary that can be exported as a PDF.



6 Solution Approach

The VayK platform will be implemented as a web-based system that combines real-time travel information with AI-generated recommendations to help users plan trips efficiently. The application will follow a client-server architecture in which the frontend manages user interaction and presentation, while the backend handles data retrieval, processing, and communication with external services.

For the frontend, we plan to use React because it enables the creation of dynamic, interactive user interfaces and supports a modular component-based design, which fits well with the multi-page workflow of our application. For the backend, we will use Python to build the API layer that coordinates external data sources and interfaces with the AI model. Python was selected due to its strong ecosystem for web development and its extensive support for working with APIs and machine learning tools. This combination of React and Python allows for a clear separation of concerns and efficient development across the team.

Our testing strategy will focus on ensuring that each part of the system functions correctly and integrates smoothly with the rest of the application. We will write unit tests for key backend functions to verify correct handling of API responses and business logic. On the frontend, we will test individual components and user workflows to confirm that pages render properly and respond correctly to user input. The adequacy of our testing approach will be measured through successful execution of core user scenarios and validation after each development sprint. By combining automated testing with iterative user feedback, we will ensure that the system remains reliable and meets functional requirements throughout development.

7 Project Management

We plan to develop the project using a combined Scrum and XP framework. Scrum fits our needs well because the project is naturally divided into several major components: activity planning, hotel selection, and flight selection. These features are relatively large in scope, making a four-week sprint structure ideal. With three primary components, a sequence of three four-week sprints aligns well with the overall course timeline. In addition to Scrum, we will incorporate elements of Extreme Programming by designing tests before implementing code in each sprint. This test-first approach will help us clearly define requirements, guide development, and ensure that each feature meets its intended functionality.

For our first iteration, our goal is to deliver a functional welcome screen and a basic itinerary creator. In the second iteration, we plan to add hotel selection functionality along with its corresponding interface. In the final iteration, we will implement flight planning features and a comprehensive itinerary summary screen. If any additional time remains after these core features



are complete, we plan to explore adding restaurant recommendations to further enhance the itinerary experience.

8 Team Management

8.1 Roles

Project Owner: Jackson

Scrum Master: Inacio

Developers: All

We chose Jackson as the product owner because he has the closest connection to Maurilio, the client, and is best positioned to communicate project goals and requirements. For the Scrum Master role, the remaining team members decided to select the position at random by drawing straws.

8.2 Scheduling

Our team meets twice per week on Mondays and Wednesdays from 2:30–3:00 PM, and these meetings are held in person. These regular meetings are used to coordinate work, review progress, and plan upcoming tasks. We plan to meet with our customer, Maurilio, approximately once per sprint to gather feedback and confirm requirements. Customer meetings with Maurilio will be conducted over Zoom for convenience and flexibility. While no fixed schedule has been set, this arrangement has been discussed with Maurilio.

8.3 Background

Inacio: Inacio has experience programming in Python, JavaScript, and C++, along with web and application development. He has also integrated large language models into a web-based legal contract editor, giving him practical experience working with AI-powered features.

Samantha: Samantha has experience programming in Python, Java, and C, and experience using web-scraping software through Mathematical Modeling coursework. She has also built Python-based data ingestion pipelines and integrated structured datasets into PostgreSQL databases, including work with real-time and large-scale data, preparing her to contribute to backend development and data integration for the project.

Jackson: Jackson brings experience in backend software development, particularly using Python, C, and C++ to build and optimize technical systems. In addition, he has worked with data

acquisition and preprocessing pipelines for machine learning, giving him a solid foundation in preparing real-world data for analytical and AI-driven applications.

Matthew: Matthew has experience in full-stack mobile application development using React Native and Django (Python). He is proficient in Python, Java, HTML/CSS, and JavaScript, providing a strong foundation across both frontend and backend technologies.

9 Constraints and Risks

One important constraint is that we will not have access to the checkout APIs for external services such as airlines and hotel booking platforms. As a result, users will not be able to complete purchases directly within our application. In the worst case, this could create friction by forcing users to open multiple external tabs to finalize bookings for each option we present. To mitigate this limitation, we plan to provide as much relevant information as possible within our platform, including pricing, schedules, locations, and comparisons, so that users can make informed decisions before leaving the site. Our goal is for users to narrow their choices entirely within VayK and only need to open a single external link for the specific flight or hotel they ultimately choose.

Another constraint is the cost associated with accessing large language models. Since LLM usage typically requires paid API calls, excessive or inefficient use could quickly exceed our budget. To address this, we plan to carefully design prompts, cache responses when possible, and limit LLM interactions to essential features such as itinerary generation and personalized recommendations. By structuring our system efficiently, we aim to balance functionality with cost-effective usage.

10 Values

1. Simplicity over Complexity

We prioritize building solutions that are intuitive, maintainable, and easy to understand. When multiple design approaches are possible, we favor the one that improves readability, testability, and long-term scalability. This principle also guides our user interface design, where we aim to create a clean, seamless experience that avoids overwhelming users with unnecessary information. For a platform centered on reducing the stress of trip planning, simplicity is essential to ensuring usability and adoption.

2. Commitment

We value reliability, strong collaboration, and respect for each team member's time and contributions. By holding ourselves accountable for assigned tasks and maintaining consistent communication, we aim to keep development on schedule and produce high-quality work.



Because this project involves multiple interconnected components, a shared commitment ensures that dependencies are met and the system functions cohesively.

3. Flexibility

We recognize that travelers have diverse preferences, budgets, and planning styles. Our team is committed to designing a system that can adapt to these varying needs through customizable itineraries and personalized recommendations. Emphasizing flexibility allows us to build a platform that feels responsive and relevant to users rather than rigid or one-size-fits-all, directly supporting our goal of creating a more intuitive trip-planning experience.

11 GitHub

README.md file with the title of our project, group number, and the group members with their roles:

The screenshot shows a GitHub repository page for a project named 'VayK'. The README.md file contains the following content:

```
Group #2
Group Members
• Jackson McDonald (Product Owner)
• Inacio de Souza (Scrum Master)
• Matthew Pearson (Developer)
• Samantha Taylormoore (Developer)
```

Below the README, there is a section titled 'Collaborators and teams'.

Public repository: This repository is public and visible to anyone. There is a 'Manage visibility' button.

Direct access: 4 entities have access to this repository. It lists 1 collaborator and 3 invitations.

Manage access: A table showing pending invites for four users:

Select all	Type	Find a collaborator...		
<input type="checkbox"/>	HeuiChan (Terrence) Lim	Awaiting hlim1's response	Pending Invite <input type="checkbox"/>	
<input type="checkbox"/>	Jackson McDonald	Awaiting Jswim05's response	Pending Invite <input type="checkbox"/>	
<input type="checkbox"/>	Matthew Pearson	matthewpearso • Collaborator		
<input type="checkbox"/>	Samantha Taylormoore	Awaiting samtaylormooredm's response	Pending Invite <input type="checkbox"/>	

